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ABSTRACT

A mailed survey sent to faculty from 132 medical technology schools, 64 medical laboratory technician schools, and 58 certified laboratory assistant schools yielded 355 responses concerning most frequently vs. least frequently used teaching techniques and most effective vs. least effective teaching techniques. Information on where and how professional attitudes and human relations skills were taught was also obtained. The raw numbers results are reported in tabular form from which rank ordered lists have been generated. In general, the teaching techniques reported to be most frequently used and most effective are those methods that are efficient (e.g., lecture and discussion) and that involve a high degree of student/faculty interaction (e.g., demonstration with return and problem-solving). Techniques reported least frequently used and least effective were lecture only, self-instruction, and programmed learning. Professional attitudes and human relations skills are reportedly taught (1) in the clinical laboratory, (2) through specific course content, and (3) integrated throughout the program. Role models, lecture and simulations were given as ways in which these skills were imparted. The data from this survey will be subjected to statistical analysis and will be reported at a later date. It speculated that differences in techniques and strategies used in clinical laboratory education have changed with educational technology and that further advances will be noted due to cultural, sociological, technological, economic and societal changes in the future. On-going studies are recommended. The survey form is appended. (Author/MSE)

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TECHNIQUES AND STRATEGIES IN CLINICAL LABORATORY SCIENCE EDUCATION

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Teaching Techniques and Strategies in Clinical Laboratory Education

A mailed survey sent to faculty from 132 Medical technology (MT) schools, 64 Medical laboratory technician (MLT-AD) schools and 58 certified laboratory assistant (MLT-C or CLA) schools yielded 355 responses concerning most frequently vs. least frequently used teaching techniques and most effective vs. least effective teaching techniques. Also requested from respondents was information on where and how professional attitudes and human relations skills were taught. The raw numbers results are reported in tabular form from which rank ordered lists have been generated. In general the teaching techniques reported to be most frequently used and most effective are those methods which are efficient (e.g. lecture and discussion) and which involve a high degree of student/faculty interaction (e.g. demonstration with return and problem solving). Techniques reported least frequently used and least effective were lecture only, self-instruction, and programmed learning.

Professional attitudes and human relations skills were reportedly taught (1) in the clinical laboratory (2) through specific course content and (3) integrated throughout the program. Role models, lecture and simulations were given as ways in which these skills were imparted.

The data from this survey will be subjected to statistical analysis and will be reported at a later date.

The authors speculate that differences in techniques and strategies used in clinical laboratory education have changed with educational technology and that further advances will be noted due to (a) cultural (b)sociological (c) technological (d) economic and societal changes in the future. Therefore, on-going studies are recommended.

TECHNIQUES AND STRATEGIES IN CLINICAL LABORATORY SCIENCE EDUCATION

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TECHNIQUES AND STRATEGIES IN CLINICAL LABORATORY SCIENCE EDUCATION

Background (Introduction)

In 1978 Topic Study Groups were suggested as a vehicle for studying trends and developing research projects related to education in the clinical laboratory sciences. The report which follows is an outgrowth of this impetus for research into the techniques and strategies which are being used in schools for the education of MT, MLT-AD and MLT-C(CLA) students.

Purpose of the Study

This study was undertaken to determine the types of teaching techniques and strategies being used for clinical laboratory education in the classroom, laboratory or clinical setting. It is hoped that promulgation of the survey findings will assist clinical laboratory science faculty in their future teaching role. The most effective or ineffective instructional methods reported by the 355 respondents may encourage faculty to review their teaching experiences. Some faculty may wish to abandon or adopt certain instructional methods based on results of this survey. In other words the purpose of this study was to report on the state of the art of teaching clinical laboratory students in 1980.

History of Clinical Laboratory Education Methods

In the 1920's laboratory technician training programs were initiated as students received on the job training. The pathologist or physician gave

this job training to young women (in preference to young men who were thought to make poor technicians[1]). By 1928 there was a Board of Registry for medical technicians. Establishment of the Board of Registry and the Board of Schools brought about standard curriculum formats and suggested courses. The standard teaching techniques were lecture and bench training.

In the 1940's war-time training methods speeded up training programs. Films and simulated materials in student laboratories were new teaching techniques.

The 1950's were the era of post-war innovations. Plastics research brought A-V materials, throw-away laboratory materials and more automation within reach of educators.

The 1960's were the age of high speed technology and the explosion of scientific knowledge which increased the demand for lengthed educational programs. Also clinical laboratory programs were split into three levels of MT, MLT and CLA, and moved into colleges, and universities, community colleges and vocational schools. In the late 60's graduate programs became more widespread with the advent of traineeships, scholarships and research grants from federal, state and private sources. Thus the programs were becoming competitive with other college curricula and faculty were also required to compete in academic circles. The variety of educational techniques widened as educational psychology, computers, and advanced technology brought new ideas for classroom experiences.

The 1970's were hailed as years of specialization in the laboratory sciences. No longer could a technologist in a laboratory of any size be expected to stay knowledgeable in all fields. The implication for teaching in clinical

laboratory sciences was that one or two teachers could no longer impart all the subject matter. Rather there must now be specialists who would teach their "content area", either at the bench or classroom level or both. This fact meant that not only were more "faculty" involved, but the preparation and enthusiasm for teaching might vary greatly.

Thus it is at the beginning of the 80's that this survey which requested information on the many teaching techniques and strategies and their effectiveness was undertaken. It is hoped that a study of the state of the art at the beginning of the 80's will be the impetus for greater interest in teaching effectiveness. The remainder of the century promises expanded scientific knowledge and technological applications for clinical instrumention. And hopefully, too, new insights for the future will be gleaned by studying the historical perspective which reveals our dynamic past.

Review of Literature

A great deal of the recent past literature regarding clinical laboratory education has revolved around the Skinnerian model of learning-behaviorism. Educators have become engrossed in behavioral objectives, goals, competencies and similar educational terms. The literature and evaluation forms prior to 1965 were replete with modes of molding, preparing and developing attitudes, professional characteristics and ethics into the curriculum. Role modeling was seen as the most effective means of portraying expectations. Grades were given for what are now termed "affective behaviors". But now these behaviors are shunned or not "taught" at all for fear of legalistic or punitive measures from litigations which might ensue due to "unfair" or "unclear" objectives.

Prior to the 60's the teacher taught via classroom and example. Norms pertaining to dress, manners and professional behaviors were expected to be fulfilled for grading.

Student riots in the late 60's made faculty leary of enforcing certain codes of behavior. The new generation wanted to dress and act like "individuals", not as "conformists". Thus faculty in professional schools, like clinical sciences, have struggled to keep some semblance of professionalism without impinging on freedom of students. This series of events reflects a sociological about a generation gap in the classroom and the clinical setting.

Enter a new era! Students are being given more responsibility for their learning. The teacher is the facilitator of learning and not necessarily the only source of facts. Problem-solving is being encouraged, as all levels of the taxonomies or domains are being used to heighten learning retention through student involvement.

Many recent studies have revealed that students have different "learning styles". Futhermore, if students' learning styles do not match "teaching styles", less learning may occur than if there is a match of styles. Thus teachers are being challenged to offer a variety of teaching methods to meet the needs of various students' learning styles.

Many faculty teach as they were taught or they teach what they were taught. When this occurs there is, in effect, little change in content or methods over the years. The age old question of which is more important - the information base or the teaching expertise of the faculty - is still moot But the fact is that both facets are very important. Graduate programs,

short courses or continuing education workshops for educators have been developed over the past two decades. Faculty have more opportunities to develop their teaching techniques as well as their science background. This evidence indicates that faculty are becoming more interested in the teaching-learning process.

Limitations of the Study

This study was limited to a survey of faculty from:

a. a random sample of 132 MT schools (out of a possible 662),

b. 64 MLT-AD schools, and

c. 58 MLT-C(CLA) schools.

Since questionnaires were completed by one or more faculty from each of the schools surveyed, there were multiple responses from some schools. Faculty members were requested to answer regarding their class. Many, persons did not respond to all questions. Conversely some persons gave more than one answer for some questions. Every response was tallied from all returned questionnaires. Thus totals from various questions differ greatly.

The study is further limited by the return rate for each of the program categories.

Basic Assumptions

It is assumed that all responses were initiated by individuals without consultation with other respondents. Thus even though multiple responses were received from many schools, each response was considered as integral and representive of faculty member's classroom or laboratory situation.

It is also assumed that responses from the random sample of 132 MT schools surveyed represents all MT schools and that the responses from the MLT-AD and MLT-C schools are representative of their respective program faculty.

Research Design

A questionnaire developed by the study group was mailed to a random sample of 132 out of 662 MT schools, to all 64 MLT-AD schools, and to all 58 MLT-C(CLA) schools for a total of 254 schools listed in Allied Health Education Directory, 7th Edition. There was a return rate of 56 (42.4%) for MT schools, 29 (45.3%) for MLT schools, and 11 (18.9%) for MLT-C schools representing a total of 96 schools. There was a total of 220 responses from MT faculty, 94 responses from MLT-AD faculty and 41 responses from MLT-C faculty for a total of 355 responses. This response rate averages 3.9, 3.2, 3.7 per MT, MLT, MLT-C school respectively (See Table 1).

On the first page of the questionnaire information was requested on the type of program, type of course, and number of classroom, clinical laboratory, or simulated laboratory hours. A check list was used to determine the educational (instructional) techniques and the domain(s) (cognitive, psychomotor, or affective) used for each technique. (See Exhibit 1).

The second page of the questionnaire had the following open-ended questions: What do you find to be the most effective instructional method? What do you find to be the least effective instructional methods? Where and how are professional attitudes taught? Where are human relations and social skills taught? The questionnaire ended with a request for comments, questions or additional information to allow for free expression aside from fixed questions.

The responses from the first page of the questionnaire were tallied and simple mathematical calculations were performed. Due to the diversity of types of classes, classroom hours, clinical and simulated laboratory settings reported, statistical analysis of these responses will be made and reported at a later date. The number of responses ranged from one to eight per school. This was so because the request had been made for several faculty from each school to respond. Some program directors sent one form from each faculty member, while others pooled their information on one form.

Results

The total of all results from the tally of most frequently utilized teaching techniques used by the respondents are shown in Table 2. Rank ordered lists were developed showing the most frequently and the least frequently used teaching techniques in each program type. (See Table 3 and 4.)

Lecture, problem solving and inquiry/questioning were the three top rank-ordered methods for all three types of educational programs, (although not in identical order). It is interesting to note that problem solving was reported to be used less frequently in MLT-C programs. This finding appears to relate to shorter curriculum and time frame as well as to expectations for MLT-C practitioner.

In general the top ten methods used in MLT and MLT-AD programs were very similar, although not in the same rank order. Self instruction, individualized instruction, student reports, and induction were less frequently reported from MLT-AD schools. These findings are not surprising in view of the shorter time frame for instruction. All of these methods require longer instructional time per learning activity.

The top four least frequently used methods according to rank order were round table discussion, panel discussion, role playing and videotaping. Also less popular methods were simulations, team development, role modeling, social skills development, field trips, research and for MLT-C, return demonstrations. (See Table 3) All of these methods require some degree of personal involvement, and more commitment and expertise for successful use. These methods also require a large student body to warrant their use. Many of the programs surveyed have eight or less students per class. It should also be noted that not all of these methods lend themselves to science teaching.

The tally of use of domains in each of the teaching methods did not lend itself to simple mathematical calculations. A computer analysis of this part of the study is being undertaken and will be reported at a later date.

The second page of the questionnaire had open-ended questions regarding the most effective and the least effective instructional methods. (See Table 5 and 6.) Respondents listed 27 different methods as "most effective" and 24 different "least effective" methods. Lecture and demonstration only were ranked high in both "most" and "least" effective lists. However, most of the respondents who listed lecture as "least" effective qualified the statement with words, such as "straight lecture", "lecture only", "long lectures", etc. The persons who listed "demonstration" as least effective qualified their responses by adding "in large groups", "in large rooms" or without "return demonstrations". Several respondents stated that discussion was least effective because time did not permit and/or that certain subjects did not lend themselves to discussion format, etc. The A-V presentations were said to be least effective when long movies, films without discussion or too many A-V's were used in one class.

The lecture is preferred by an overwhelming majority of the faculty who responded. Many respondents went on to explain that they seldom used lecture alone, but rather in conjunction with demonstrations, A-V's, discussion or inquiry/questioning.

The six top ranked methods classified as "most effective" from the total of all programmatic types were as follows: (See Table 6 for breakdown by programmatic type)

1. lecture (89)
2. discussion (72)
3. lecture with AV (61)
4. demonstration (60)
5. problem solving (52)
6. inquiry/questioning (36)

The six methods ranked least effective from the total of all programmatic types were as follows: (See Table 8 for breakdown by programmatic types)

1. lecture (75)
2. self instruction (50)
3. programmed learning (23)
4. demonstration only (11)
5. A-V presentation only (10)
5. Videotapes/TV (10)

Many faculty members not only listed self-instruction, programmed learning, videotapes, audiotapes, and closed circuit TV as least effective, but stated that students were "turned off", "fell asleep", "were bored stiff", "hated this instructional method", etc. It was obvious from the survey of this sample of faculty that these methods are unpopular forms of instruction as

perceived by faculty through student reactions. This finding should be of interest to faculty of those schools who are contemplating purchase or development of self-instructional materials. Several respondents stated that use of these materials must be accompanied by close faculty supervision, used only for the few students who enjoy learning by themselves or in conjunction with other "live" presentations. It is also interesting to note that "self instruction" and "programmed learning" received only three votes each as most effective methods. Videotapes, audiotapes and closed circuit TV were never mentioned as "most effective" in this survey.

Some other methods which were in the top ten methods ranked most effective were demonstration with return and individualized instruction.

Also most of the methods mentioned as most effective require more student involvement. Conversely the methods mentioned as "least effective" were those methods which require the least student involvement.

The top four activities listed by faculty members for developing professional attitudes in rank order by number of times mentioned were:

1. role model (106)
2. lectures (44)
3. simulations (11)
4. expectations through evaluations (9)

The top three locations for where these activities occur were overwhelmingly listed as follows: (See Table 9)

1. clinical laboratory (91)
2. specific course content (68)
3. integrated throughout program (51)

The top activities listed by all faculty members for developing human relations and social skills in rank order by number of times mentioned were as follows: (See Table 11 and 12.)

1. role models (78)
2. lecture (22)
3. simulations (13)

The rank order of locations where these activities were taught is as follows: (See Tables 11 and 12)

1. clinical laboratory (82)
2. specific course content (73)
3. integrated throughout program (28)
4. home (14)
5. previously learned (11)

The three top rank ordered responses for where and how professional attitudes, human relations and social skills are developed are identical. (See Table 10 and 12) This finding is not surprising in light of the nature of the content and the setting in which these characteristics are learned and integrated.

The open-ended responses were abbreviated for tallying and the list in Table 9 shows the variety of responses given. It is apparent by the number and variety of responses that the professional attitude as well as human relations and social skills are deliberately addressed by a large number of faculty from the responding schools for all three levels of laboratory practitioners. Since the questionnaires were sent to randomly selected schools for MT, and to all MLT and CLA schools, the supposition can be made that these results may be generalized for all schools. From the variety of responses given it can be

assumed that many schools provide opportunities for some type of course work for professional attitude development. Students are made aware of this phase of their profession in a deliberate manner by many programs, as indicated by activities listed which require students to participate in formal classroom activities. Some of the methods listed, such as role models, peers, and previous experience, are informal modes of learning and defy measurement or description of outcomes. Nevertheless these informal modes are listed frequently and are possibly the most effective and impressive for the neophyte practitioner. As is often the case with informal modes of learning, there are no "controls" for "norms" on which the role modeling is based. The "role model" method is handed down through "generations" and is highly subject to dilution and interpretation of stringency because of "cultural" differences among professionals in different locales. An example of a case in point is that of interpretation of "professional dress" in various institutional settings. It is also of great interest to note that 11 respondents indicated that professional attitudes are not taught and that 93 respondents did not answer this question.

Responses regarding human relations and social skills were more difficult to interpret and tally. Methods requiring informal contacts and formal classroom involvement were listed. Most of these formal methods correspond with the responses given for professional attitude development. Responses such as home, school, church, college, etc, reflect the faculty expectations that students will have basic background in human relations and social skills prior to entrance into clinical laboratory science programs. Responses, such as, courses in communications, sociology, psychology, human relations and behavioral science, indicate sources other than clinical laboratory science curriculum for background. It can be deducted that even those 24 respondents who chose not to answer these two questions and those 108 persons who responded "not at all", must convey some nonverbal and/or informal messages to students regarding professional behavior, human relations and social skills.

Discussion and Implications

The results of this survey reveal the most and least frequently used teaching methods. According to this study there are only three methods which are reported to be used by over 200 faculty, there are fourteen methods which are used by 103-185 faculty members and 13 methods which 20-85 faculty members use. These findings indicate that most faculty still prefer lecture, problem solving and inquiry/questioning as their favorite teaching methods. These methods lend themselves easily to science and laboratory teaching. It is obvious from the number of responses per faculty member that most faculty do not limit themselves to one teaching method. It is inspiring to find a wide distribution of responses for the range of teaching methods listed.

The results of the most and least effective teaching methods show a high concern with student involvement. The clinical laboratory sciences faculty have advantages not afforded many other faculty members, namely, lower student ratio and relevance of subject matter. Students usually encounter practice in the subject either immediately or no longer than a year after the classroom presentations. This relevance and immediacy renders teaching easier because the student is aware of the need to learn for retention and practical application. It was interesting to note that all forms of self-instruction were low on the list of most effective and high on the list of least effective teaching methods. These findings show the very high consistency of this survey. (Statistical methods will be reported later.)

The professional attitude, human relations and social skills development responses indicate a continued commitment to teach these skills in spite of recent trends away from this facet of the educational process. The responses

also indicated an ambiguity in knowing where and how to better impart this important portion of the professional program. Many respondents indicated concern for lack of leadership by professional educators, by elementary and high school preparation and by home and family preparation. The "me" and "now" generation philosophy was decried as a present and growing problem in educating for professionalism.

Recommendation

The recommendation is made that a similar study be made every five years to attempt to identify changing trends in teaching methods in clinical laboratory science programs.

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TABLE 1

RESPONSE TO QUESTIONNAIRE ON
TECHNIQUES AND STRATEGIES IN EDUCATION

	TYPE OF SCHOOL			
	MT	MLT	MLT-C	TOTAL
# OF SCHOOLS SURVEYED	132	64	58	254
# OF SCHOOLS RESPONDING	56	29	11	96
# OF INDIVIDUAL RESPONSES	220	94	41	355
PERCENT OF SCHOOLS RESPONDING	42.4%	45.3%	18.9%	
AVERAGE # RESPONSES/SCHOOL	3.9	3.2	3.7	

TABLE 2

COMPOSITE OF #'S OF REPORTED USES OF
TEACHING TECHNIQUES BY FACULTY IN MT, MLT, MLT-C SCHOOLS

Type of Teaching Technique Used	Rank Order by Type of School and # of Faculty Responding				
	MT(220)	MLT-AD	MLT-C	Total	Rank Order
Lecture	182	68	37	287	1
Problem Solving	175	67	30	272	2
Inquiry/Questioning	160	58	34	252	3
Deduction	116	48	21	185	4
Individualized Learning	120	43	15	178	5
Class Discussion	91	55	26	172	6
Self Instruction	116	42	14	172	6
Student Reports	104	37	16	157	7
Demonstrations	93	41	19	153	8
Induction	94	41	14	149	9
Group Discussion	94	33	15	152	10
Resource Person	96	33	12	141	11
Tutoring	79	44	10	133	12
Ethics Class	69	35	15	119	13
Programmed Learning	71	29	10	110	14
Simulation	69	27	11	107	15
Competency Based Education	52	34	18	104	16
Professional Involvement	61	25	17	103	17
Attitude Development	45	21	19	85	18
Return Demonstration	53	18	7	78	19
Research	52	14	7	73	20
Field Trips	32	21	14	67	21
Social Skills	29	15	14	58	22
Role Model	34	14	3	51	23
TV (Closed Circuit)	22	15	3	40	24
Team Development	26	11	3	40	24
Videotapes	25	8	4	37	25
Role Play	20	3	1	24	26
Panel Discussion	16	4	3	23	27
Round Table Discussion	16	5	1	21	28
Other	16	3	1	20	29

TABLE 3

MOST FREQUENTLY USED TEACHING TECHNIQUES
(Rank Ordered Per # of Tallies According To Type of School)

	Total	MT	MLT	MLT-C
Lecture	1	1	1	1
Problem-Solving	2	2	2	3
Inquiry/Questioning	3	3	3	2
Deduction	4	5	5	5
Individualized Learning	5	4	7	10
Class Discussion	6	10	4	4
Self Instruction	6	5	8	-
Student Reports	7	6	10	9
Demonstration	8	9	9	6
Induction	9	-	9	-
Group Discussion	10	8	-	10

TABLE 4

LEAST FREQUENTLY USED TEACHING TECHNQIUES
(Rank Ordered Per # of Tallies According To Type of Schools)

	Total	MT	MLT	MLT-C
Round Table Discussion	1	1	3	1
Panel Discussion	2	1	2	3
Role Playing	3	2	1	2
Videotaping	4	4	4	4
Simulations	5	3	7	3
Team Development	5	5	5	3
Role Model	6	8	6	3
Social Skills	7	6	7	-
Field Trips	8	7	-	9
Research	9	-	6	5
Return Demonstration	10	-	-	5

TABLE 5

INSTRUCTIONAL METHODS REPORTED MOST EFFECTIVE ACCORDING TO PROGRAMMATIC TYPE

	PROGRAMMATIC TYPES				
METHODOLOGY	MT(Clinical)	MT(Other)	MLT(AD)	MLT(C)	TOTAL
Demonstration only	17	23	10	10	60
Demonstration with return	16	8	5	3	32
Demonstration plus Lab	0	2	0	0	2
Hands on	4	8	5	0	17
Lecture	12	44	15	18	89
Lecture with AV	4	13	7	37	61
Lecture plus lab	0	5	3	3	11
Lecture plus demonstration	0	4	3	4	11
Programmed Learning	2	5	1	1	8
Individualized instruction	5	16	2	0	23
Self Instruction	1	1	0	1	3
Taped Lectures	0	1	0	0	1
Tapes with slides	0	1	0	0	1
Videotapes/TV	1	6	0	1	8
AV	0	11	9	2	22
Seminars	0	1	2	0	3
Simulation	5	13	0	1	19
One-on-One	9	9	1	2	21
Inquiry/questioning	8	17	7	4	36
Induction/Deduction	3	0	1	1	5
Problem Solving	8	31	9	4	52
Research	1	1	0	0	2
Role Playing	1	5	1	0	7
Student Presentations	0	8	2	0	10
Small Group Discussion	7	2	0	0	9
Group Discussion	0	45	9	9	63
Other	5	11	2	2	20
No response	14	38	33	8	93

TABLE 6

RANK ORDERING OF INSTRUCTIONAL METHODS REPORTED TO BE MOST EFFECTIVE

Total of All Programs

1. Lecture (89)
2. Discussion(72)
3. Lecture with AV(61)
4. Demonstration (60)
5. Problem Solving(52)
6. Inquiry/questioning(36)

MT (Other)

1. Group Discussion(47)
2. Lecture(44)
3. Problem Solving(31)
4. Demonstration (23)
5. Inquiry Questioning(17)

MLT (C)

1. Lecture (18)
2. Demonstration(10)
3. Group Discussion(9)
4.5.6. Problem Solving(4)
4.5.6. Inquiry/questioning(4)
4.5.6. Lecture plus demonstration(4)

MT (Clinical)

1. Demonstration(17)
2. Demonstration with return(16)
3. Lecture(12)
4. One-on-One(9)
5. Inquiry/questioning(8)
5. Problem Solving (8)

MLT (AD)

1. Lecture (15)
2. Demonstration(10)
3.4.5. Problem Solving(9)
3.4.5. AV(9)

TABLE 7

INSTRUCTIONAL METHODS REPORTED LEAST EFFECTIVE ACCORDING TO PROGRAMMATIC TYPE

	PROGRAMMATIC TYPES				
METHODOLOGY	MT(Clinical)	MT(Other)	MLT(AD)	MLT(C)	TOTAL
Demonstration only	2	7	2	0	11
Demonstration with return	0	2	0	0	2
Lecture	12	35	18	10	75
Lecture with AV	0	0	0	1	1
Programmed Learning	5	11	7	0	23
Individualized Instruction	1	1	1	0	3
Self Instruction	11	24	12	3	50
Taped Lectures	1	3	4	1	9
Tapes with slides	2	1	3	0	6
Assigned readings	0	2	0	3	5
Movies	1	0	2	0	3
Videotapes/TV	5	4	0	1	10
AV	3	3	4	0	10
Seminars	0	0	2	0	2
Simulation	0	1	0	0	1
One-on-One	1	0	1	0	2
Inquiry/questioning	1	2	0	0	3
Problem solving	1	1	1	0	3
Research	1	2	0	0	3
Role playing	3	2	2	2	9
Student Presentations	0	3	1	1	5
Small Group Discussion	2	0	1	5	8
Group Discussion	0	1	1	0	2
Other	3	6	3	0	12
No response	20	51	33	11	115

TABLE 8

RANK ORDERING OF INSTRUCTIONAL METHODS REPORTED TO BE LEAST EFFECTIVE

Total of All Programs

1. Lecture (75)
2. Self-instruction (50)
3. Programmed Learning (23)
4. Demonstration only (11)
5. A-V Presentation Only (10)

MT (Clinical)

1. Lecture (12)
2. Self-instruction (11)
3/4. Programmed Learning (5)
3/4. Video tapes/TV (5)

MT (Other)

1. Lecture (35)
2. Self-instruction (24)
3. Programmed Learning (11)
4. Demonstration only (7)

MLT (C)

1. Lecture (10)
2. Small group discussion (5)
3/4. Self-instruction (3)
3/4. Assigned Readings (3)

MLT (AD)

1. Lecture (18)
2. Self-instruction (12)
3. Programmed Learning (7)
4/5. Taped Lecture (4)
4/5. AV (4)

TABLE 9

"WHERE AND HOW ARE PROFESSIONAL ATTITUDES TAUGHT?"

	PROGRAMMATIC TYPES				
WHERE	MT(Clinical)	MT(Other)	MLT(AD)	MLT(C)	TOTAL
Professional Meetings	3	5	1	0	9
Home	0	3	0	0	3
Elementary School	3	1	0	0	4
High School	2	0	0	0	2
College	6	0	1	0	7
Clinical Laboratory	31	30	21	9	91
Previously Learned	0	5	0	0	5
Church	2	0	0	0	2
Specific Course Content	0	31	23	14	68
Integrated Throughout Program	-	29	14	8	51
HOW					
Simulation	3	7	1	0	11
Role Models	33	55	11	7	106
Lecture	17	16	7	4	44
Evaluations	3	5	0	1	9
Outside Resources	0	3	0	0	3
Role Playing	0	3	1	0	4
Answering Phone, etc.	0	2	0	0	2
Seminars	0	2	2	2	6
Case Studies	0	0	2	0	2
Others	0	2	1	0	3
Not Taught	1	7	3	0	11
Not Answered	13	40	32	8	93

TABLE 10

RANK ORDER OF FREQUENCIES OF WHERE AND HOW PROFESSIONAL ATTITUDES ARE TAUGHT

Total of All Programs

WHERE?	HOW?
1. Clinical Laboratory (91)	1. Role models (106)
2. Specific Course Content (68)	2. Lecture (44)
Integrated throughout program (51)	3. Simulation (11)
	4. Evaluations (9)

MT(Clinical)

1. Clinical Laboratory (31)	1. Role models (33)
2. College (6)	2. Lecture (17)
3/4. Elementary school (3)	3/4. Simulations (3)
3/4. Professional meetings (3)	3/4. Evaluations (3)

MT(Others)

1. Specific Course Content (31)	1. Role models (55)
2. Clinical Laboratory (30)	2. Lecture (16)
3. Integrated throughout program (29)	3. Simulation (7)

MLT(AD)

1. Specific Course Content (23)	1. Role models (11)
2. Clinical Laboratory (21)	2. Lecture (7)
3. Integrated throughout program (14)	

MLT(C)

1. Specific Course Content (14)	1. Role models (7)
2. Clinical Laboratory (9)	2. Lecture (4)
3. Integrated throughout program (8)	

TABLE 11

"WHERE AND HOW ARE HUMAN RELATIONS SKILLS AND SOCIAL SKILLS TAUGHT?"

	PROGRAMMATIC TYPES				
WHERE	MT(Clinical)	MT(Other)	MLT(AD)	MLT(C)	TOTAL
Professional Meetings	1	0	0	0	1
Home	6	7	0	1	14
Elementary School	0	6	0	0	6
High School	0	4	0	0	4
College	0	2	0	0	2
Clinical Laboratory	25	31	20	6	82
Previously Learned	0	11	0	0	11
Church	0	2	0	0	2
Specific Course Content	0	39	20	14	73
Integrated Throughout Program	0	14	5	9	28
HOW					
Simulation	3	10	0	0	13
Role Models	23	38	11	6	78
Lecture	11	4	6	1	22
Evaluation	2	0	0	1	3
Outside Resources	0	2	2	0	4
Role Playing	0	3	1	0	4
Answering Phone, etc.	0	4	0	0	4
Seminars	0	6	2	0	8
Others	1	1	0	0	2
Not Taught	1	14	6	3	24
Not Answered	16	48	34	10	108

TABLE 12

RANK ORDERING OF FREQUENCIES OF WHERE AND HOW HUMAN RELATIONS AND SOCIAL SKILLS ARE TAUGHT

Total of All Programs

WHERE?	HOW?
1. Clinical Laboratory (82)	1. Role models (78)
2. Specific Course Content (73)	2. Lecture (22)
3. Integrated throughout program (28)	3. Simulation (13)
4. Home (14)	
4. Previously learned (11)	

MT(Clinical)

1. Clinical Laboratory (25)	1. Role models (23)
2. Home (6)	2. Lecture (11)
	3. Simulation (3)

MT(Other)

1. Specific Course Content (39)	1. Role models (38)
2. Clinical Laboratory (31)	2. Simulation (10)
3. Integrated throughout program (14)	3. Seminars (6)
4. Previously learned (11)	

MLT(AD)

1/2. Clinical Laboratory (20)	1. Role models (11)
1/2. Specific Course Content (20)	2. Lecture (6)
3. Integrated throughout program (5)	

MLT(C)

1. Specific Course Content (14)	1. Role models (6)
2. Integrated throughout program (9)	
3. Clinical Laboratory (6)	

EXHIBIT I

RETURN TO: Marie Vittetoe
CAHP MC Annex #2, Room 122
University of Kentucky
Lexington, KY 40536
BY: April 25, 1980

March 17, 1980

ASMT TOPIC STUDY GROUP
QUESTIONNAIRE FOR
TECHNIQUES & STRATEGIES IN EDUCATION

PLEASE XEROX THIS FORM FOR EACH COURSE REPORTED

Name of School _____ City _____

Type of Program
_____ MLT-C(CLA)
_____ MLT 1+1
_____ MLT Integrated
_____ MT
_____ 2+2
_____ 3+1
_____ Integrated
_____ Other
_____ College
_____ University
_____ Hospital
_____ Other (Please Specify)
_____

Respondent's Name (optional) _____ full-time _____ part-time _____
Type of course: _____ classroom; _____ simulated lab _____ clinical lab
_____ Number hrs/class; _____ number class periods/week _____ number weeks taught

PART I Instructions: Listed below are some commonly used teaching techniques and brief descriptions of domains for educational objectives. Please check the technique you use and also indicate the educational domain(s) covered by the course objectives.

C = Cognitive domain: refers to intellectual outcomes such as knowledge, understanding and thinking skills
P = Psychomotor domain: refers to motor skills, such as demonstrations, manipulation
A = Affective domain: refers to feeling and emotion, such as interests, attitudes, appreciation and professional adjustment

	Technique Used	C	P	A
lecture				
discussion: group				
class				
panel				
round table				
student reports				
field trips				
team development				
programmed learning				
individualization				
tutoring				
resource persons				
induction(specific to general)				
deduction(general to specific)				
self instruction				
research				
demonstration				
return demonstration				
CBE-competency based				
TV (closed circuit)				
mock-ups/simulation				
roleplaying				
videotaping				
inquiry/questioning				

	Technique Used	C	P	A
problem-solving				
work attitude development				
social skill development				
ethical decision making				
professional involvement				
role modeling				
other				

PART II Open-Ended Response

1. What instructional methods do you find to be most effective?

2. What instructional methods do you find to be least effective?

3. Where and how are professional attitudes taught?

4. Where are human relations skills and social skills taught?

Please feel free to comment on any of the above responses or add, discuss, or question topics related to teaching techniques/strategies. Use another sheet if needed.

EXHIBIT 1

RETURN TO: Marie Vittetoe
CAHP MC Annex #2, Room 122
University of Kentucky
Lexington, KY 40536
BY: April 25, 1980

March 17, 1980

ASMT TOPIC STUDY GROUP
QUESTIONNAIRE FOR
TECHNIQUES & STRATEGIES IN EDUCATION

PLEASE XEROX THIS FORM FOR EACH COURSE REPORTED

Name of School _____ City _____

Type of Program
_____ MLT-C(CLA)
_____ MLT 1+1
_____ MLT Integrated
_____ MT
_____ 2+2
_____ 3+1
_____ Integrated
_____ Other
_____ College
_____ University
_____ Hospital
_____ Other (Please Specify) _____

Respondent's Name (optional) _____ full-time _____ part-time _____
Type of course: _____ classroom; _____ simulated lab _____ clinical lab
_____ Number hrs/class; _____ number class periods/week _____ number weeks taught

PART I Instructions: Listed below are some commonly used teaching techniques and brief descriptions of domains for educational objectives. Please check the technique you use and also indicate the educational domain(s) covered by the course objectives.

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	Technique Used	C	P	A
lecture				
discussion: group				
class				
panel				
round table				
student reports				
field trips				
team development				
programmed learning				
individualization				
tutoring				
resource persons				
induction(specific to general)				
deduction(general to specific)				
self instruction				
research				
demonstration				
return demonstration				
CBE-competency based				
TV (closed circuit)				
mock-ups/simulation				
roleplaying				
videotaping				
inquiry/questioning				

	Technique Used	C	P	A
problem-solving				
work attitude development				
social skill development				
ethical decision making				
professional involvement				
role modeling				
other				